

A PLEASANT TRIP

Dr. Shamsul Islam Farooqi (Alig.)

Foreword

Dr. Shamsul Islam Farooqi is known as a scientist. He has spent most of his life in popularizing scientific knowledge. He brings you an interesting book full of useful informations. This is about a system called respiration that starts right at your birth till the last moments. Life depends on breathing, through which we receive oxygen without which we can not live even for few minutes. Till the child is within mother's womb, he need not use his nose and lungs to have oxygen as his blood continues to receive its oxygen requirements from his mother's blood. After two to four minutes of his birth, his lungs get activated and he starts getting oxygen through breathing from his nose.

Oxygen present in air reaches our lungs through breathing from the nose and oxygenates 250-300 krores of RBC in our blood. In turn those RBCs take oxygen to one hundred trillion cells of our body.

The book in your hand is an interesting story of a pleasant trip of Oxygen molecules.

An average man fills his lungs with about 6 liters of air in one minute through breathing. With this measure, he utilizes 8,640 liters of air in one day. While sitting in silence, you breath 13-17 times in a minute which during vigorous exercise, increases to 80 times per minute. With an average of 20 liters per minute, your one day breaths count 28,800. If man offers thanks to his Lord only once for each breathe, even this will not be enough.

Similarly for thanking Allah, offering of 32 rakat Salah containing 32 Ruku and 64 Sajdas will also be less.

Our merciful God has provided several other arrangements also so as to keep our body alive such as digestion, blood circulation, communication, musculature, skeleton, reproduction, excretion and immunity systems etc. True is the saying of our Lord that it is impossible to count the blessings of your Allah and He also said man thanks Him but little.

In this interesting book, the writer tells how one oxygen molecule or O₂, composed of two of its atoms, enters the nose while dust particles and germs get detained by the hairs. How our Lord has created a desired temperature of 90°F and 75 to 80% humidity within the nasal cavity. How oxygen molecules pass from the throat, pharynx and larynx to the lungs where they transfer their oxygen to blood cells within alveoli and take up carbon di oxide and other waste products for throwing out.

The book provides you further details. Read it thoughtfully, note the important points, give indepth thought to Allah's immense kindness and sincerely follow His commands throughout your life.

May this book provoke your inquisitiveness, strengthen your faith and help you to become a gratefull servant of Allah (Āmeen).

Ejaz Ahmad Aslam

Chief Editor


Radiance Views Weekly

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A Pleasant Trip

Ali Abdullah was very intelligent and extraordinary sensible. Since he started talking, he never spoke anything senseless. Even his birth was extraordinary. Others are born after nine months whereas he came to this world in only seven months. But he was so small and weak after birth that he had to remain in the hospital for a long time. No one was hopeful for his life but as said, "if God wishes, no one can harm", he, after one and a half month recovered to such an extent that he was relieved from the hospital. When he returned home, he was just a skeleton. There was hardly any flesh and simply the skin was covered over bones. His complexion was also very dark. Soon, Allah made him strong and healthy. His complexion became fairer and body looked healthy. However, one weakness could be discovered only after about a year. His legs were weak. He could neither stand nor was able to walk. He was not even capable of sitting. If ever he was made to sit, he would fall on one side. Doctors were consulted who suggested for his physiotherapy. Leg exercises were performed for more than two and a half years and only then he started walking on his legs.

Like any other children, Ali Abdullah was also mischievous but less than his brothers. He would rather stop them whenever they crossed certain limits and gave them advices like elders. He was in the habit of giving deep thought to every thing and tried to unearth the same. Often, he used to think that sometimes back when he was young, his hands, legs and head were very small but as he grew up, they also became larger, How? He was told that people grow bigger with age. He used to think that why then the growth of his grand father, grand mother, father and mother stopped. Why they did not grow further with age? Whenever he would see himself and others



breathing, he would think how they continuously breath. Whether awake or in sleep, their breaths never stop. Why? Similarly people's hearts constantly beat. They neither stop nor get tired. How? Innumerable such quiries used to strike his mind and he would like to find their answers.

One day, when similar thoughts were creeping in his mind, he fell asleep. Hardly he slept for a short while, when he saw himself playing with Ali Ibrahim, his younger brother in the courtyard of his house. Both were running one after another. While running, Ali Ibrahim asked:

“Abdullah Bhai today Ameen Bhai is not to be seen. Where he has disappeared? Is he busy in doing his home work in some corner? Let us call him also. Then it will be more pleasurable to play together.

Both started searching their brother Ali Ameen. After looking at several places, they found him in his bed enjoying sleep. He was perhaps in sound sleep as the sheet covering him was moving up and down with each breath.

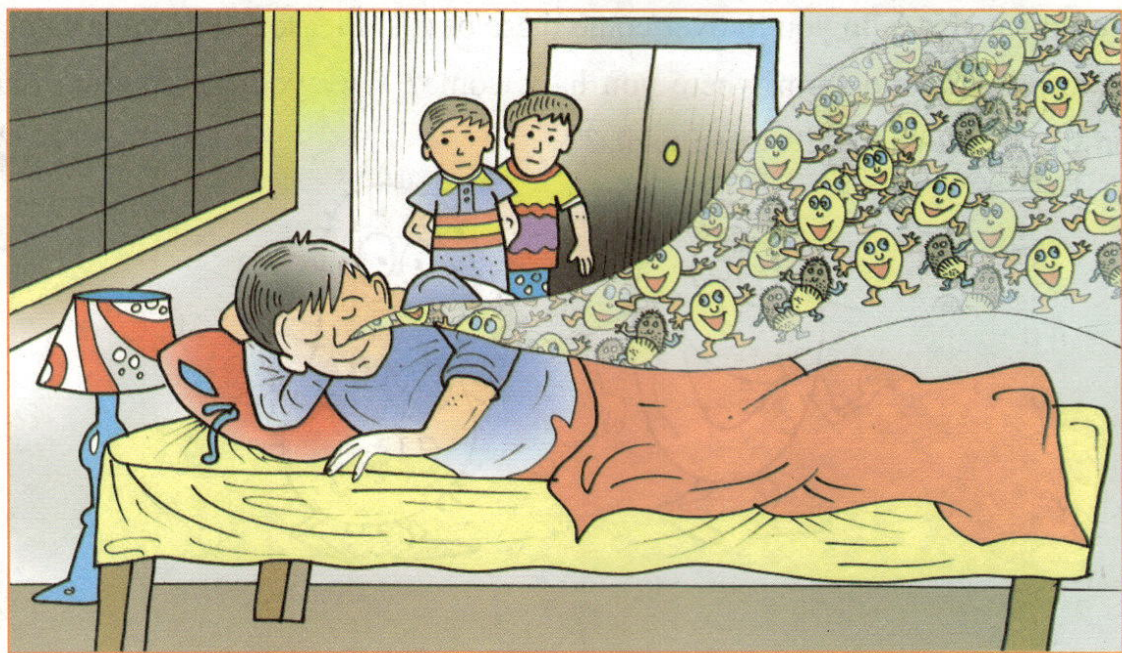
“But what is this? Suddenly Ibrahim said to Abdullah, pointing out towards Ameen.

“Abdullah Bhai look there, what could be this large bright area in front of Ameen Bhai's nose?

This area was very narrow near his nose but had widened at a distance. Within this area, innumerable small toylike children were visible who were jumping. Ali Ibrahim wanted to know who were they and where from they had come? Ali Abdullah was also astonished to look at them and said:

“Really Ali Ibrahim what you are saying is corrcet. But did you also mark that these children are floating in a straight line and proceeding towards his nose.”

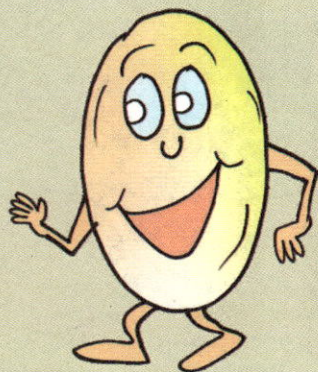
“Yes they are not only proceeding towards Ameen Bhai's nose but also entering in it. They enter when he inhales but as soon as he exales, they come out in a row and disappear in room's atmosphere.



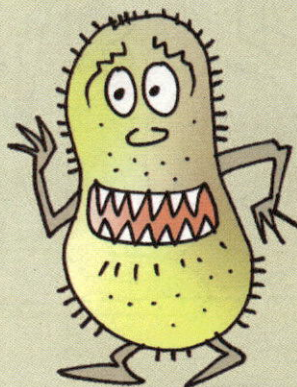
Both were surprised to look at this site. Children present within the bright area were in huge number. They were not in thousands or lakhs but in crores. They were visible only within the bright area in front of nose and that also when seen very minutely. However, with a casual look there was just a bright area only. Out of these immunerable children, there were some with healthy looks and pretty faces. When both brothers came nearer, they heard them saying: "Friends be quick, after going inside his body, we shall strengthen his blood and then these devils will not be able to do any harm to him." Perhaps they were pointing to those ugly looking children who were also present within the bright area. Those children looked like devils by their faces. While proceeding towards Ameen's nose, they were making noises and were telling each other: "Be quick, we shall attack the body of this boy after reaching inside. We shall wound him and then suck his blood."

On hearing this, both were shocked. They thought how to save Ameen Bhai from these devils. After a little bit of thinking, they came to one of the good looking children and said: "Dear friend just now you were talking to make his blood strong. He is our elder brother."

Could we also help you to overcome these devils. Please tell us your name. Who are you and from where you have come? Why you are entering our brother's nose along with these devils?"



Oxygen molecule O₂



disease germ

"I am happy to know that you are his brothers. In fact I am a oxygen molecule¹ and remain in the air. If you like, you can call me by my short name O₂. Besides us, these devils are also present in the air but wherever they go, they cause different diseases. In fact, they are germs of diseases. There are dust particles also in the air and they also do harm. Whenever a person breathes in, we, these devils and dust particles enter his body, they make that person ill but when we go inside we make his red blood cells strong. In turn, they make his body cells stronger which in fact build his body. If body is strong, these devils and dust particles are not able to do any harm."

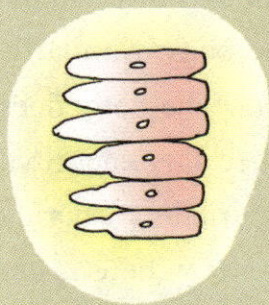
Ali Abdullah and Ali Ibrahim were surprised to hear that human body is composed of cells. Hearing this, Ali Abdullah said to O₂:

"Friend what are you telling. We very well know that not only Ameen Bhai's body but bodies of all human beings are made up of

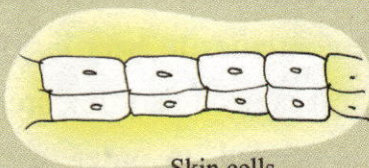
¹**Molecule:** When more than one atoms combine they form a molecule. Oxygen is written O₂ which means an oxygen molecule is formed by combining two atoms of oxygen. Water is written as H₂O meaning a water molecule is formed by combining two atoms of hydrogen with one atom of oxygen.

flesh and bones. Bones are inside the body whereas flesh is covered over them.”

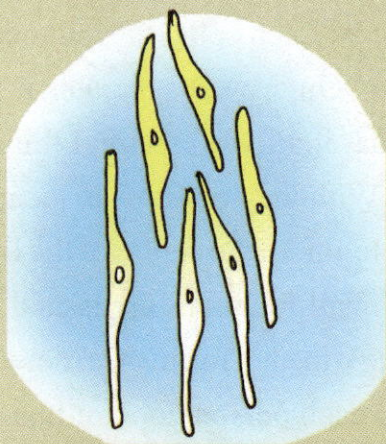
“What you say is also correct. But perhaps you are not aware that flesh and bones are also made up of cells. Human bodies are composed of nearly one hundred trillion cells which belong to about two hundred kinds. Each kind of cells forms a particular part of the body. For instance, the outer skin is formed of rectangular flattened cells, eye cells are cone or rod-shaped, those forming muscles are robe-like whereas brain cells have long fibres spreading over the whole body. They receive messages from different parts of the body and send them to the brain, which then issues orders to act,” O2 replied.



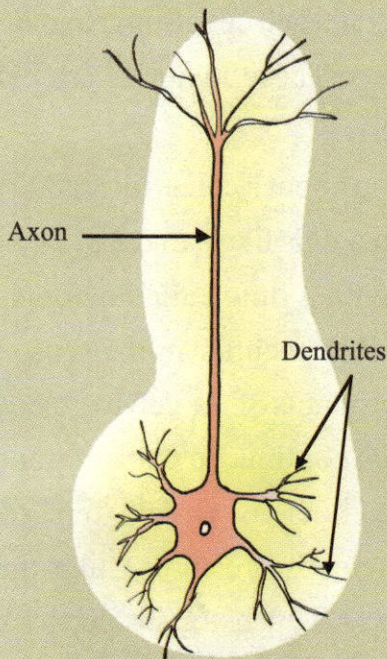
Cone and rod cells of the eye




Skin cells



Muscle's cells



Sensory cell



“That means cell is the unit of human body.” Said Ali Abdullah.

“Of course, the unit of human body is cell only. If you could have a trip of the cell-city, you will be simply surprised. Even the smallest cell which can not be seen with naked eyes and is only visible with the help of a microscope, is like a bounded city in appearance where thousands of factories are working day and night”, told O2.

Hearing about factories, Ali Abdullah asked:

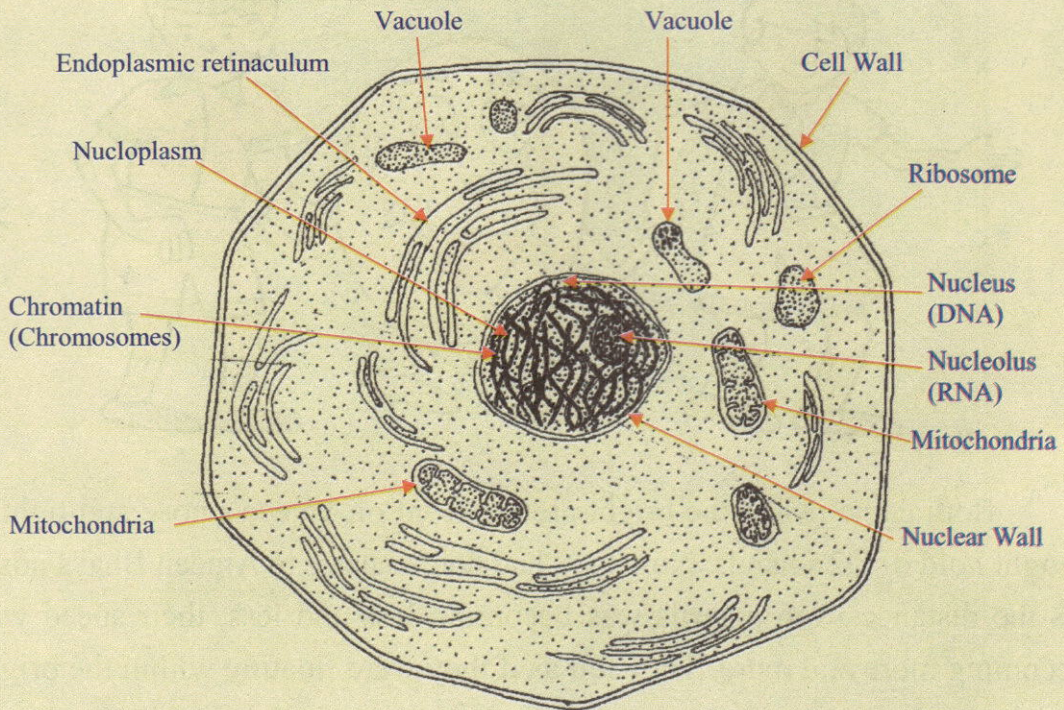
“What for are these factories?”

“In order to keep the human body alive, several things such as Proteins, Carbohydrates, Fat and Energy are essential. To prepare these, factories are needed. Energy is extremely necessary for human body without which no act is possible. Heart continues to beat inside the body. Similarly expansion and retraction of chest is necessary for breathing. The body does it by itself for which energy is needed. In order to produce this energy, nearly thousand factories work in each cell. Sugar and other nutrients are burnt in them with the help of oxygen. These factories are called energy houses or Mitochondria,” explained O2.

“Talking about a cell is like talking of a magical city.” said Ali Abdullah.

“In fact cell is like a magical city only. Each cell is surrounded by a wall and is filled with a fluid called cytoplasm. Outer wall separates it from other cells. The wall is peculiar in the sense that it allows essential things to enter while waste products of the cell to go out. Within cytoplasm are located various factories which continue to work day and night. In the centre of the cell is a nice building called nucleus. Orders to perform all functions are issued from here. Inside the nucleus are thread-like things in the form of a network called chromosomes. All ancestral properties of each person good or bad are hidden in them. Besides, each cell also has a miraculous molecule

called DNA in which each person's life story is contained. For instance, how tall that man will be, what will be his height, how will be his complexion, hairs, eyes and habits etc. What would be his age and at what age he will suffer from which diseases? DNA orders for each such thing at a proper time, then the cells prepare the needed materials in their factories in order to comply the act.”



Cell and its parts

“Friend your informations are so interesting that we have also developed a desire to have a trip of a human body.” Ali Abdullah said with great fondness.

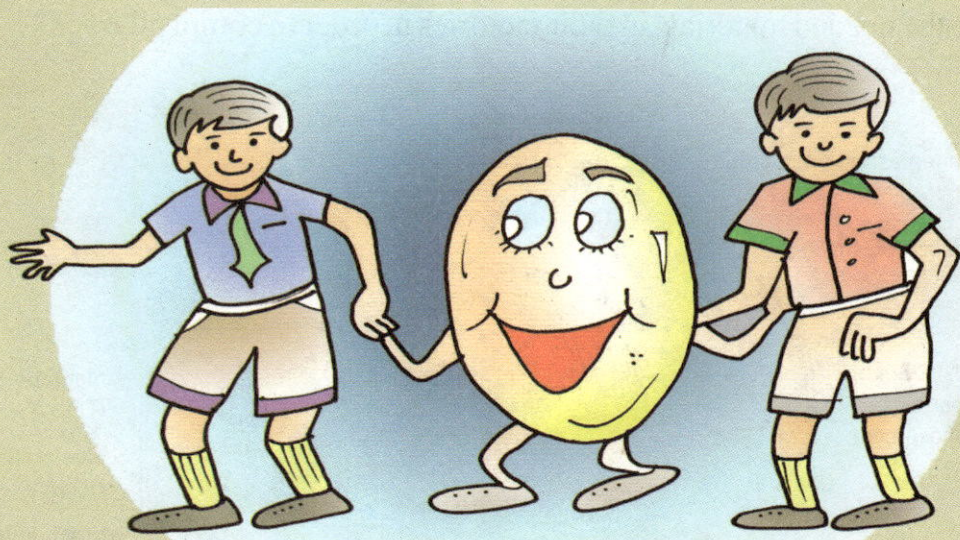
“Why a trip of any human body? If willing, you can have a short trip within the body of your own brother.” Said O2.

“How? Both asked simultaneously.

“You also enter the nose of your brother alongwith us and automatically you have a trip from nose to lungs.” O2 told them.

“How we could enter the nose of our brother? Asked Ali Ibrahim.

“Very easily. You only come within this bright area and catch hold of our hands. When the breath entering the nose of your brother will pull us and the devils, then you will also be pulled and reach inside.” O2 explained.

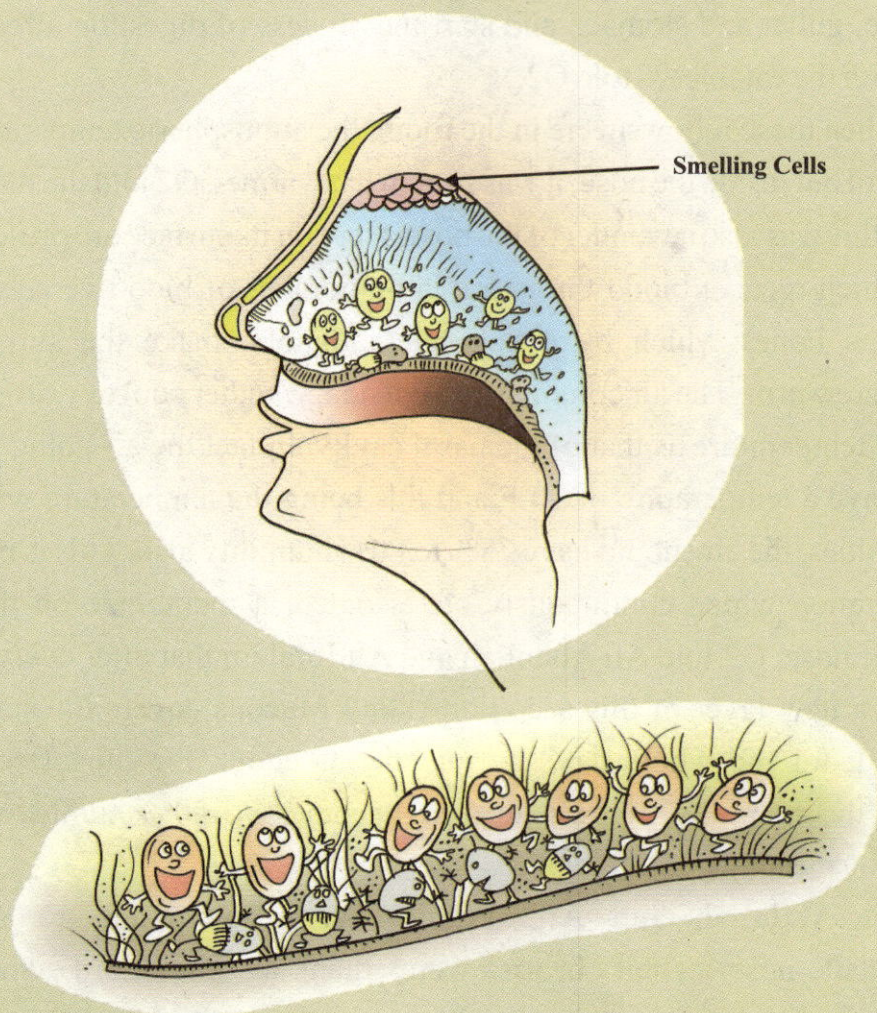



Both came inside the bright area in front of Ameen's nose and tightly caught hold of O2's hands. Now they had come nearer to Ameen Bhai's nose. As the distance from nostrils was becoming less and less, their speed was becoming more and more. They felt as if they were floating within the bright area in front of the nose. Distance shortened quickly and suddenly they reach inside Ameen Bhai's nose, holding O2's hands.

Inner portion of the nose was looking like a tunnel within which a jungle of hairs was growing every where. O2 and his fellows were easily slipping out of these hairs. Ali Abdullah and Ali Ibrahim were also not facing any difficulty in walking through the forest and proceeding forward by holding hands of O2 but they were surprised and happy also to see that dust particles and devils were finding great difficulty in passing through the hairs. They got entangled withing the hairs. Ali Abdullah and Ali Ibrahim saw a white membrane lining the

inner surface of nose at the base of hairs. The membrane cells were secreting a sticky fluid which had spread over the whole surface. Dust particles and devils were getting entangled within this sticky secretion. For sometime, they would cry for help and then die off. Slowly they were finished in large numbers. When they proceeded a little further, they observed that their number had greatly reduced. Looking this, Ali Abdullah said to O2.

“Friend our brother's nose has performed a wonder. It has already finished the devils and dust particles by itself.”






“It was just one wonder only. You will come across many more as you proceed further. There is a cluster of cells in the upper region of the nose which has astonishing qualities. These cells have an extraordinary capability of smelling things. They not only recognize things by smelling but can also let us know if an eatable is worth eating or not. If this property of nose would have not been there, people would have eaten even rotten things and then no one could prevent them from falling ill. The moment these cells smell a tasty eatable, they immediately inform the brain which orders the saliva producing glands to produce digestive juices. The juices thus secreted, get spread on the passage of tongue, gullet and stomach and start the process of digestion after getting mixed with the eatables?” told O2.

When these fellows were in the room, the atmospheric temperature was a little cool but inside the nose, it was somewhat warmer. O2 told the reason. He told that this was also a wonder of the nose. Here on its surface are present three bones which receive blood through a large number of blood vessels. Blood warms the bones which by acting like radiators, make the surrounding atmosphere warm. The air coming from outside, whether cool or warm, attains the same temperature as that of the nasal cavity. In fact the air going to lungs should have a temperature of 90°F and this being the temperature within the nose. Besides, the air should have 75% to 80% humidity also. This is managed by a secretion which continuously oozes out of a membrane on the inner surface of nose. O2 told Ali Abdullah and Ali Ibrahim that after every twenty minutes, a new layer of this secretion called Mucous covers the surface. If calculated, for the whole day, the quantity is about one liter. Because of mucous, the humidity of even dry air becomes 75-80% humid which is required by the lungs.

Ali Abdullah and Ali Ibrahim were astonished to see the wonders of nose. Their hearts were thanking the Lord who gave



humans an extraordinary gift like nose. They saw that the devils were almost vanished, leaving just few only. The air had become absolutely free from dust particles as they got stuck in the mucous. Now it was only O2 and his fellows who were left unhurt. When Ali Abdullah and Ali Ibrahim asked O2 that what will happen to the remaining devils, he replied:

“The nose can make a last effort also to get rid of them.”

“What is that?” both asked together.

“When the remaining devils reach the hind most part of the nose, one feels slight irritation over there. This message is conveyed to the brain which orders lungs to fill more air and expel it forcefully. Lungs accordingly fill lot of air in them and then expel it with a speed of several hundred miles per hour. Due to this, one sneezes with a force and the stormy air goes out alongwith the devils,” explained O2.

Hearing this, Ali Abdullah said:

“Oh this being the reason. Now I understand why on this occasion we say Alhamdu-lillah and thank Allah who saves us from the notorious and harmful germs.”

While passing through the last part of Ameen's nose and looking at the heap of dirt accumulated by germs sticking in mucous, Ali Ibrahim said:

“Ali Bhai! Our Ameen Bhai got rid of the dust and germs but what will happen to this dirt which has got accumulated due to the dead bodies of germs with dust because this itself will be harmful. Hearing this Ali Abdullah replied:

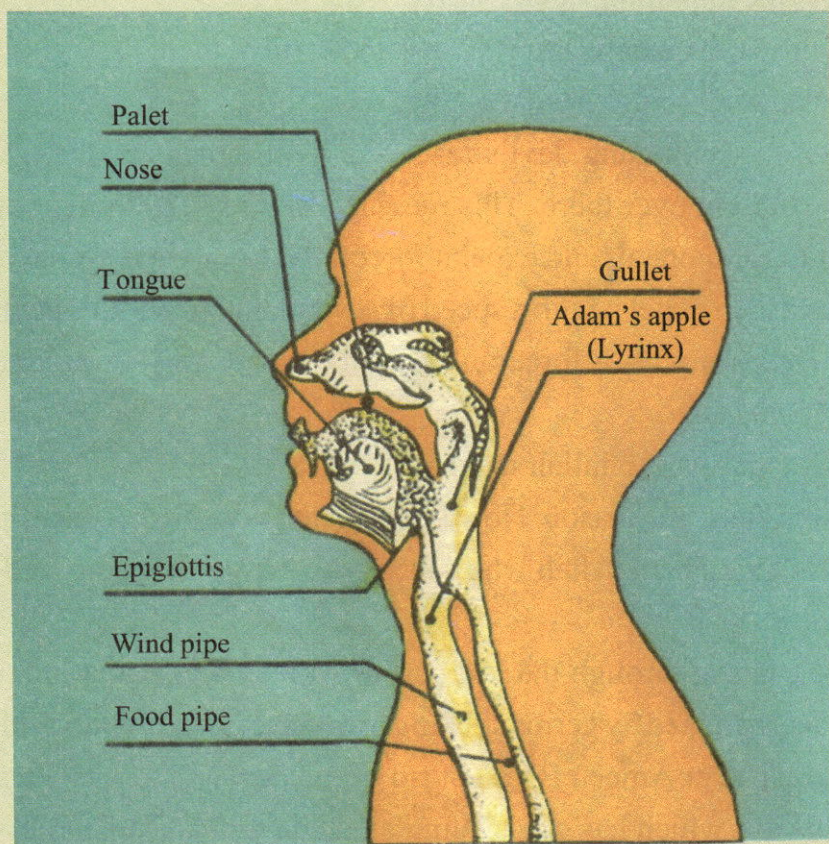
“Ali Ibrahim you perhaps don't remember that we offer prayers five times a day and before each prayer washing is also done, during which we clean our nose thrice by talking water up to the soft part of it and thus accumulation of dirt is impossible.”

Hearing this, O2 said:


“Even then if some dirt remains, nature cleans it by itself.”

“How?” both asked together.

“From the surface of the cells situated at the back portion are projected very fine hairs looking like a broom. Due to the movement of these hairs, the accumulated dirt is thrown into the gullet from where it goes to stomach and gets dissolved by the acidic juices.”



After coming out of the nasal tunnel, they had come to a broad place of throat. On reaching here, they realized that the air had become absolutely free from dust particles and the germs which accompanied them. The air now only contained clean, sparkling and good looking O_2 molecules. This air was not only warm but wet also. O_2 told that this was an extremely significant area from where not only air coming from the nose passes but a morsel too that comes from mouth.



Cells of this area are extremely vigilant in their working. They never commit mistakes and if by any chance it occurs, it proves fatal.

Now the region of throat where they had reached was called the pharynx¹. Food chewed and thinned in the mouth used to pass from here. Just behind this were the two openings of the nose. Over them was a small organ known as Uvula or “Halaq ka Kau'a” in common language. O2 told that if a person laughs or loudly laughs while the thinned food is passing from here, the latter may go out through the nose but nature has made an excellent arrangement. At that time, the Uvula is raised up to block that nasal openings and thus a big danger is over.

The tunnel of throat was about five inches long. This was somewhat broad at the upper side while narrowing posterior ward. It was a common passage for air, food and water. Ali Abdullah and Ali Ibrahim saw that another tunnel had started when the first tunnel came to the end. This was also covered by the white membrane and was covered with nine rings made of cartilage, providing strength to it. O2 told that this portion is called 'larynx'². One part of larynx is raised somewhat up ward which is known as “Adam's Apple”³. Immediately after larynx, were two tubes, one for the air and the other for food. O2 had to pass through the air tube alongwith Ali Abdullah, Ali Ibrahim and all his fellows. Any mistake while entering this tube was also fatal. O2 told that whenever a person engulfs some water or a morsel of food, Adam's Apple is raised and at the same time a valve closes the opening of air passage. Thus the danger of going water or food in the breathing tube is over. Any eatable or drink that goes to the food tube it is directed towards stomach.

While passing through larynx, Ali Abdullah and Ali Ibrahim saw lip-like raised clusters of cells on its inner surface whose colour

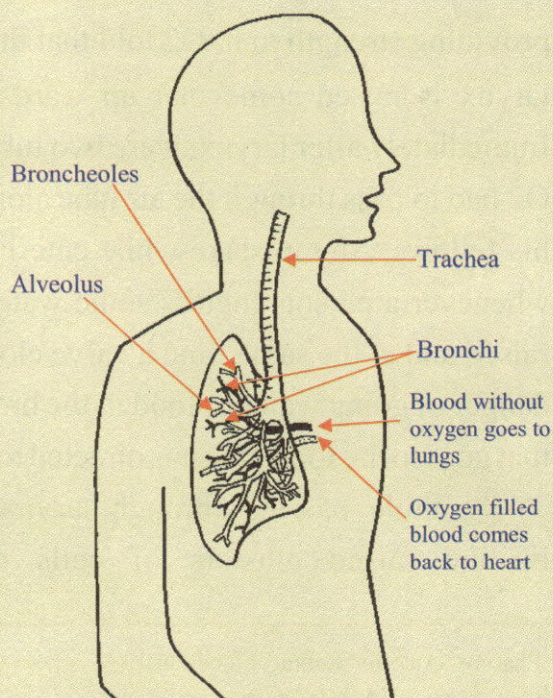
¹ Pharynx : Anterior portion of food canal.

² Larynx : Upper expanded region of breathing tube.


³ Adam's apple : Raised area of gullet beneath chin.

was whitish and outer side glazed. O2 told that these are the instruments with the help of which human beings speak. These are called vocal chords¹. When the air coming from lungs passes with force, it creates a thrill which gets converted into voices. When the vocal chords are open, the voice is low and heavy but when retracted, it is high and deep. After passing through pharynx and nose, when this voice is about to go out of the mouth, an echo is produced in it because of the presence of several empty spaces in that region. If vocal chords are seen at a time when a person is speaking in a low and high tone making changes in his accent, then accordingly vocal chord will appear opening and retracting. Oxygen filled blood comes back to heart Blood without oxygen goes to lungs Bronchi Trachea Alveolus Bronchioles.

As Ameen was sleeping, his food tube was not in use and thus the passage of larynx was free. O2 alongwith his immumerable fellows, Ali Abdullah and Ali Ibrahim passed from here very smoothly. They saw that the next tube was also covered with whitish membrane and was reinforced, for strength, with cartilaginous rings. O2 told Ali Abdullah and Ali Ibrahim that they will not be having any obstacle in their way. However, the passage will go on narrowing but we shall reach your brother's lung very easily. As this passage gets narrower its names also get changed.



¹ **Vocal Chords** : When wind passes through these, sound is produced



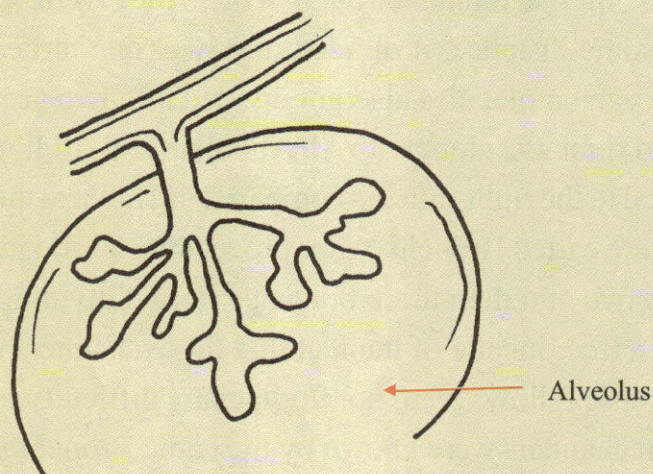
The name of the tunnel through which they were passing now was Trachea. After some distance, it divided into two, one turned to right and the other to left. Oxygen molecules also got divided into two groups and they also turned to left and right. O₂ alongwith Ali Abdullah and Ali Ibrahim and some of his fellows turned to the right side. As compared to Trachea, these channels were narrower and were called Bronchi. After proceeding a little more, Bronchi also got divided into two and then these branches started dividing quickly just like the branches of a tree. In spite of the fact that these channels were very narrow and constricted, these fellows were not finding any difficulty in passing through them. These thin channels were known by the name Bronchioles and a network of these had spread over the whole right lung which looked like a sac in the right portion of the chest. Its colour was reddish and had a spongy appearance. O₂ told that its expansion and retraction was due to him and his companions. He said that they were travelling through its channels, it was expanded but when we return, the channels are empty and gets retracted. Same thing must be happening with the left lung also. He told the two lungs weigh about half a kilograms or a little more.

O₂ alongwith Ali Abdullah and Ali Ibrahim had already reached at the last end of these channels. O₂ told that this was the place where he and his fellows will strengthen the blood of their brother. Terminal end of each narrow channel opened in a place which was like a small grape, called Alveolus. All over the lungs, innumerable such Alveoli were present whose total number was nearly 750 million.

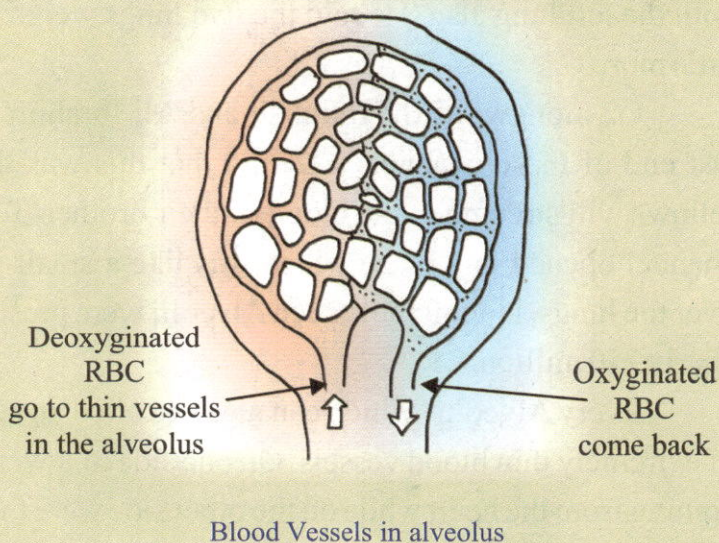
Every Alveolus which can also be called an air sac, had over it a network of extremely thin blood vessels. On one side of it were those vessels which were coming from the heart while on the other side were those going towards it. Inside the vessels coming from the heart were blood cells which were no more red but had turned bluish in

¹ **Trachea** : Broad breathing tube. Narrower tubes are called Tracheoles.

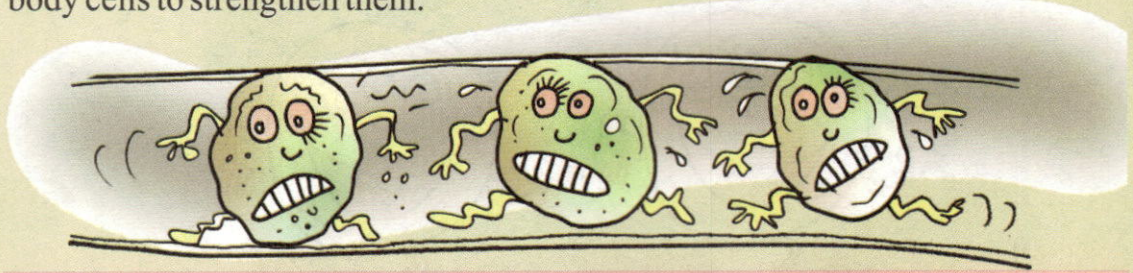
² **Bronchi** : Breathing tubes entering lungs.



colour. The reason was that they had no oxygen as the same had been utilized for strengthening different body cells and in turn they had filled their bodies with the carbon di oxide produced by them as waste product. Now here inside alveolus, reverse of this process was to happen. This means the blood cells will receive oxygen from O_2 molecules and give them their carbon di oxide after which they will happily enter the blood vessels going towards the



heart and make a move towards it. The heart will then send them to different body cells to strengthen them.



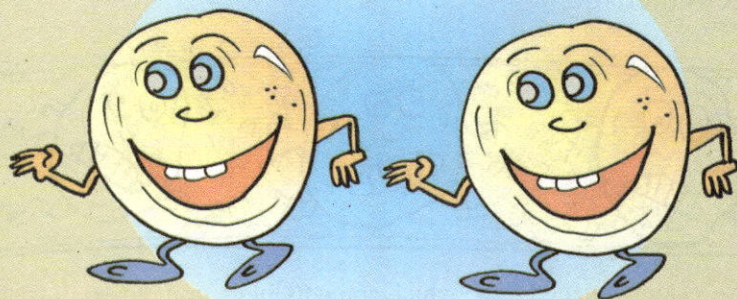
Deoxygenated RBC which come to lungs from heart

The vessels containing weak blood cells were so thin that they had to come in the alveolus one by one in a line. The process was no less than a miracle. The weak bluish blood cell would enter the alveolus, absorb oxygen from an oxygen molecule and transfer the accumulated carbon di oxide into it. In no time, its features would get completely changed. The blood cell would become red and shining



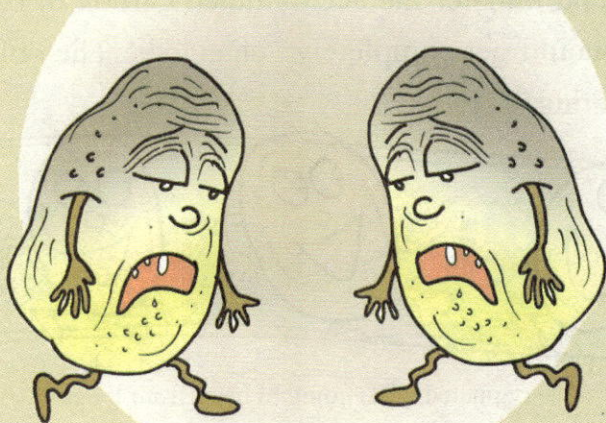
Oxygenated RBC going to heart from lungs

and would happily make a move towards heart by entering a vessel going towards it. On the other hand, fresh and good-looking oxygen molecule would turn ugly after giving its oxygen and taking up the waste carbon di oxide, it would quickly return by the same route by which it had come. Same thing happened with O₂ also with which the two brothers had come here. He transferred its oxygen to a weak blood cell and made it strong and filled its own body with carbon di oxide. At once, its beauty vanished and its looks became ugly. Quickly it caught hold the hands of Ali Abdullah and Ali Ibrahim and started back. Similarly all other fellows of O₂ also completed their




Oxygen filled molecule of O_2

task and started back with him. Soon this caravan of dirty air molecules came out of Ameen's nose by following the old passage.



O_2 molecule after giving its oxygen and taking up carbon di oxide

After reaching back to the room, Ali Abdullah and Ali Ibrahim saw that Ameen Bhai was still enjoying his sleep. O_2 immediately after coming out the nose disappeared. Perhaps he was feeling embarrassed on his dirty appearance. Ali Abdullah and Ali Ibrahim were very happy to have this astonishing pleasant trip. They had seen the respiratory system of human beings from very near. At the moment, their hearts were filled with a feeling of greatness of Allah who provided such an excellent system of regular strengthening of the



bodies of their servants through breathing. Human beings are not even aware of the dangers they come across during breathing but thanks to their Lord who provided them an automatic system to encounter them. Whereas if they themselves would had tried to evolve a mechanism, they would had not succeeded. They were thinking how affectionate and merciful is their Creator. Is it not obligatory for us to pay our thanks for this? Both the brothers made a vow from the depth of their hearts that from now onwards they will never be forgetful about their Salahs. Before every Salah, they would thoroughly clean their noses by taking water up to the soft parts. They also made a vow that they will remain quiet while eating. They will neither talk much during eating nor will they have a loud laughter during it.

